Trend Study 16C-30-04

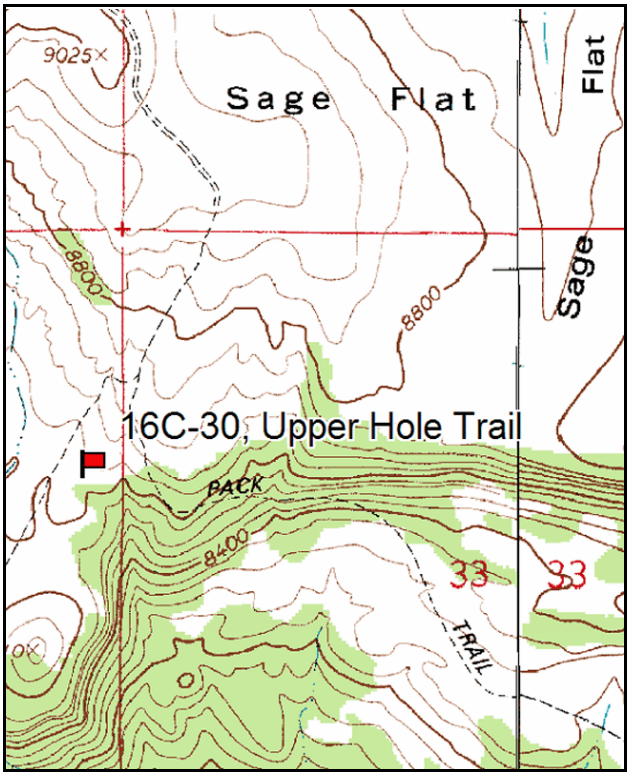
Study site name: Upper Hole Trail . Vegetation type: Mixed Mountain Brush .

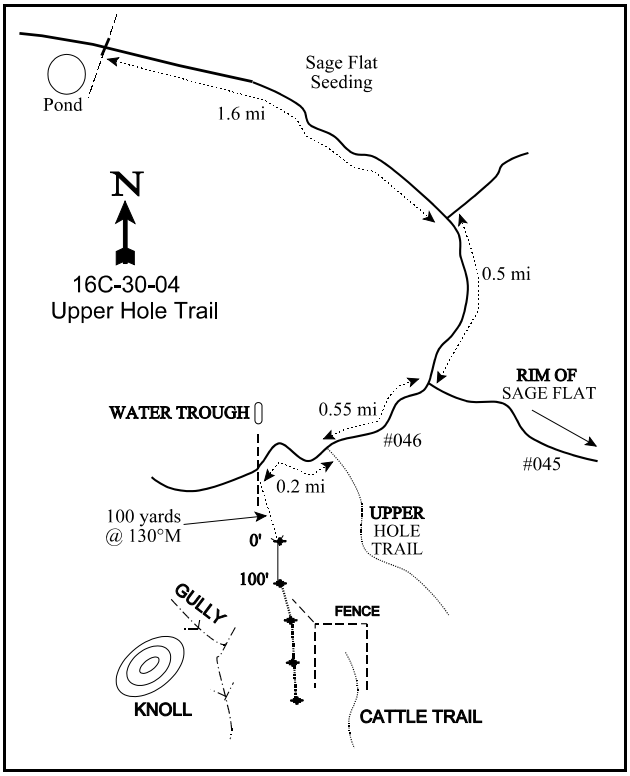
Compass bearing: frequency baseline 181 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 3 rebar @ 5', belt 5 rebar @ 5'.

LOCATION DESCRIPTION

From Wrigley Springs Reservoir, continue SE 3.0 miles to the T-intersection by Flagstaff Peak. Turn left towards Sage Flat. Go 1.65 miles and cross a cattleguard. Continue straight 0.9 miles to a fence and cattleguard by a pond. Continue SE 1.0 miles to the Sage Flat seeding. Go 0.6 miles to a fork. Continue straight on the main road about 0.5 miles to a fork. At this point, a road that runs along the rim of Sage Flat takes off to the left (#045). Turn right at 0.35 miles on F.S. Road #046. Continue south 0.2 miles to the Hole Trail. Go another 0.2 miles on the main road to an old fence line by an unused water trough. The study starts about 100 yards south of the road at 130° M. The first baseline stake, a 2' green fencepost with browse tag #9020 attached, is along an old fence line.





Map Name: Flagstaff Peak , Diagrammatic Sketch

Township 20S , Range 6E , Section 32 GPS: NAD 27, UTM 12S 4320736 N, 477351 E

DISCUSSION

Upper Hole Trail - Trend Study No. 16C-30

The Upper Hole Trail trend study is located near Sage Flat. The area around Sage Flat and South Sage Flat on the southeast side of Ferron Mountain is listed as important elk winter range although there was little elk sign encountered in 1994, but sign increased substantially in 1999. It is an open sagebrush community with scattered mountain brush, mostly on the slopes. The study itself is located in a low saddle between the large sagebrush flats, in a mixed mountain brush type near the edge of the cliffs where the Upper Hole Trail climbs up from the pinyon-juniper country below. At the study site, slope is 12% with a southern exposure. The elevation is 8,600 feet. This Forest Service land is in the Ferron allotment and is grazed by 1,607 cattle in the summer from June 21 to October 5. Pellet group data from 1999 estimate 5 deer, 32 elk and 31 cow days use/acre (12 ddu/ha, 79 edu/ha, and 77 cdu/ha). Rabbit pellet groups are very numerous. Cattle were in the area during the 1999 reading. Pellet group data from 2004 estimate 15 deer, 30 elk, and 8 cow days use/acre (36 ddu/ha, 73 edu/ha, and 20 cdu/ha). Most of the elk pellet groups were from last winter, but some are from this spring. Cattle pats were from last season.

The soil has a clay loam texture with a neutral pH (7.3). The soil depth is moderately deep with an effective rooting depth estimated at almost 16 inches. Phosphorus and potassium are limited at just 2.6 ppm and 54.4 ppm respectively. Values less than 10 ppm for phosphorus and 70 ppm for potassium can limit normal plant growth and development. There is some rock on the surface and within the profile and there is a compacted layer at about 10 to 12 inches in depth. Although there is substantial soil movement and gullying on surrounding areas, especially on cattle and game trails, vegetative cover is generally adequate to prevent serious erosion on the study site.

The mountain brush slope is extremely diverse with 17 browse species encountered. The dominant species on the site include curleaf mountain mahogany, antelope bitterbrush, mountain big sagebrush, and Utah serviceberry. Wood's rose and snowberry are also common. Curlleaf mountain mahogany made up 25% of the shrub cover in 1994, 28% in 1999, and 26% in 2004. This stand is predominantly mature (88%) with a mixture of shrub-like and tree-like forms. The average height is 62 inches by 57 inches wide and the treelike forms are highlined and partially unavailable. There was estimated 420 plants/acre in 2004 and percent decadency is low. Utilization has been light in the past, but use has been moderate to heavy since 1999. There is also a small population of heavily hedged true mountain mahogany. This is about 2,000 feet above its optimal elevational limit and it would be expected for true mountain mahogany to do poorly at this elevation. This along with rabbitbrush, Wood's rose, and snowberry provide some additional browse forage. A few scattered pinyon and limber pine are also found on the site.

Antelope bitterbrush had a density of 2,720 plants/acre, mostly mature, in 1994, 1,980 in 1999, and 2,080 in 2004. Utilization was light to moderate in 1994, since 1999 utilization is moderate to heavy with nearly half of the population showing heavy use with a clubbed growth form. Vigor is good and there were few decadent individuals. The mature shrubs averaged about 1 foot in height with a three foot crown. There were a few young and no seedlings reported in 1988 or 1994. A few seedlings were estimated in 1999 and 2004 and young plants are at the lowest rate of recruitment, estimating only 3% of the bitterbrush population in 2004. Some of the difference in density between 1994 estimates and 1999 counts may be caused by the difficulty in counting this large, prostrate shrub. In some instances, it is hard to tell where one plant stops and another starts.

Mountain big sagebrush populations have remained at a moderately constant level of about 2,300 plants/acre. Utilization is light, recruitment is adequate and percent decadency has continued to decrease since 1994 (10%) to only 4% in 2004. Black sagebrush has increased in density from 300 plants/acre in 1994 to 1,280 in 1999 and 1,760 in 2004. This site appears to be a marginal one for mountain big sagebrush. Poor vigor was

common in 1988 for both species and a few mountain big sagebrush plants sampled in 1999 were chlorotic. Recall the very low amounts of phosphorus in the soil. The compaction layer found in the soil profile at 10 to 12 inches in depth may be a partial rooting barrier for the deeper rooted mountain big sagebrush. It prefers soils that are generally about 14 inches in depth.

Serviceberry had a population density of 4,799 plants/acre in 1988. Nearly all (98.6%) of these shrubs were classified as young plants. Seedlings were also abundant. This artificially inflated the population, but it returned to a more sustainable level by 1994 when 1,180 mostly mature plants were estimated. Mature plants averaged 2.5 feet in height with a crown diameter of almost three feet. Utilization was mostly light with a few individuals displaying moderate to heavy use. The population in 1999 declined to 500 plants/acre. Use was mostly moderate to heavy, vigor normal, and percent decadence low at only 12%. Some of the differences in density between years is mostly due to the much larger sample used since 1994 and a sampling error counting stems instead of whole plants. The population in 2004 increased slightly from 1999 estimates to 640 plants/acre. Vigor is good, recruitment is adequate, and percent decadence is low. Utilization has increased from moderate to heavy use.

Diversity is also high in the herbaceous component of the community. Ten species of grass were identified in 2004. Although combined together they only provided 8% total cover in 1994, 7% in 1999, and 9% in 2004. Of these grasses, Salina wildrye is the most abundant. It accounted for 59% of the grass cover in 1994, 57% in 1999, and 52% in 2004. Diversity of forbs is excellent with 31 different species found in 1994, 28 in 1999, and 33 in 2004. Many are valuable forage species. Indian paintbrush, penstemon, redroot and sulfur eriogonum, and Oregon fleabane are most often utilized. Two low value forbs, rock goldenrod and desert phlox, provide nearly half of the forb cover.

1994 TREND ASSESSMENT

Relative percent bare ground cover has decreased from 31% to 25%. This is not enough improvement to show a change in trend, therefore, soil trend is considered stable. At this time vegetative cover offers as much protection to the soil as does the litter. Most of the vegetative cover (58%) comes from browse, but there is also an abundant herbaceous component which has increased in nested frequency since 1988. Most preferred browse species appear to have stable mature populations, although mountain big sagebrush and black sagebrush have increased decadency rates. Several additional species were picked up in the shrub density strips due to the lengthening of the baseline in 1994. This new larger sample gives a better, more representative sample of the area. The browse trend is stable. Grasses are shifting toward more native and palatable species for both livestock and big game. Sum nested frequency for perennial grasses increased slightly since 1988. There was a large increase in summed nested frequency for perennial forbs, most of which offer moderate ground cover. The herbaceous understory trend is slightly up. The Desirable Components Index (see methods) rated this site as good with a score of 72 due to good shrub cover, low decadence, many young shrubs, and good grass and forb cover.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up slightly (4)
winter range condition (DC Index) - 72 (good) Mountain brush type

1999 TREND ASSESSMENT

Trend for soil is up slightly. Percent cover of bare ground has declined and litter cover has increased. Vegetation cover has also increased but the improvement comes entirely from shrub cover which is less effective at protecting the soil. Rock and pavement cover have doubled since 1994 which may indicate some

soil loss. Trend for the key browse species, serviceberry, mountain big sagebrush and curlleaf mountain mahogany, are considered stable. Utilization is moderate to heavy on serviceberry and curlleaf, but vigor remains good and percent decadence low. Mountain big sagebrush shows mostly light use. Vigor has improved and percent decadence has declined from 23% to 10%. Trend for the herbaceous is stable. Sum of nested frequency for perennial grasses and forbs have declined slightly but the dominant species, Salina wildrye, rock goldenrod, and desert phlox which provide 53% of the herbaceous cover, have remained stable. The Desirable Components Index rated this site as good with a score of 79 due to an increase in shrub cover, low decadence, and an increase in young shrubs. Grass cover decrease lightly, but forb cover remains good.

TREND ASSESSMENT
soil - up slightly (4)
browse - stable (3)
herbaceous understory - stable (3)
winter range condition (DC Index) - 79 (good) Mountain brush type

2004 TREND ASSESSMENT

Trend for soil is stable. Percent cover for bare ground increased slightly and litter cover decreased slightly. Vegetation cover increased in grasses, forbs, and shrubs, but predominately in the shrubs. Rock and pavement cover has decreased suggesting a halt in soil loss. Trend for key browse species, curlleaf mountain mahogany, serviceberry, mountain big sagebrush, and antelope bitterbrush, is stable. Utilization is moderate to heavy on bitterbrush, curleaf mountain mahogany, and serviceberry, while mountain big sagebrush has light use. Vigor remains good and percent decadence is low for all species. Trend for herbaceous understory is slightly down. Sum of nested frequency for perennial grasses and forbs decreased enough to show a slightly downward change in trend. The Desirable Components Index rated this site as good with a score of 79 due to good shrub cover, low decadence, several young shrubs, and good grass and forb cover.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly down (2)
winter range condition (DC Index) - 79 (good) Mountain brush type

HERBACEOUS TRENDS --
Management unit 16C, Study no: 30

Type	Species	Nested Frequency				Average Cover %		
		'88	'94	'99	'04	'94	'99	'04
G	Agropyron cristatum	-	1	4	4	.03	.03	.18
G	Agropyron dasystachyum	-	-	-	8	-	-	.04
G	Agropyron smithii	$_{b}$32	$_{b}$52	$_{b}$41	$_{a}$6	1.06	.26	.03
G	Agropyron spicatum	-	-	-	7	-	-	.18
G	Aristida purpurea	-	-	1	-	-	.00	-
G	Bouteloua gracilis	-	1	-	-	.00	-	-
G	Carex spp.	$_{a}$6	$_{b}$35	$_{ab}$16	$_{b}$21	.41	.37	.36
G	Elymus salina	$_{b}$251	$_{a}$173	$_{a}$169	$_{a}$146	5.05	4.10	4.52

Type	Species	Nested Frequency				Average Cover %		
		'88	'94	'99	'04	'94	'99	'04
G	Koeleria cristata	10	5	1	-	.06	.00	-
G	Oryzopsis hymenoides	10	12	10	8	.10	.09	.02
G	Poa fendleriana	$_{a}$63	$_{ab}$85	$_{a}$76	$_{b}$129	1.14	1.08	2.49
G	Sitanion hystrix	1	7	3	10	.04	.00	.09
G	Stipa comata	$_{b}$7	$_{ab}$8	$_{ab}$2	$_{a}$-	.04	.00	-
G	Stipa lettermani	$_{a}$-	$_{b}$31	$_{c}$66	$_{b}$44	.57	1.25	.76
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		380	410	389	383	8.53	7.24	8.69
Total for Grasses		380	410	389	383	8.53	7.24	8.69
F	Antennaria rosea	-	-	3	-	-	.03	-
F	Arenaria fendleri	-	5	9	10	.03	.24	.12
F	Astragalus convallarius	2	13	1	1	.11	.01	.03
F	Astragalus minthorniae	-	-	-	2	-	-	.00
F	Astragalus miser	$_{a}$-	$_{b}$7	$_{a}$-	$_{a}$-	.15	-	-
F	Astragalus tenellus	$_{a}$10	$_{ab}$19	$_{b}$33	$_{ab}$19	.16	.99	1.46
F	Aster spp.	$_{a}$-	$_{a}$-	$_{ab}$4	$_{b}$10	-	.01	.07
F	Caulanthus crassicaulis	3	-	-	-	-	-	-
F	Castilleja linariaefolia	$_{c}$62	$_{bc}$29	$_{b}$28	$_{a}$4	.19	.22	.09
F	Calochortus nuttallii	-	3	-	-	.00	-	-
F	Chaenactis douglasii	$_{b}$23	$_{a}$1	$_{ab}$19	$_{a}$-	.00	.06	-
F	Cirsium spp.	1	6	8	4	.04	.10	.03
F	Crepis acuminata	13	6	4	8	.01	.01	.13
F	Cryptantha spp.	1	-	-	-	-	-	-
F	Cymopterus spp.	2	2	-	-	.01	-	.00
F	Erigeron eatonii	$_{b}$40	$_{b}$48	$_{b}$35	$_{ab}$6	.33	.18	.03
F	Erigeron flagellaris	-	-	3	4	-	.00	.06
F	Erigeron spp.	-	-	9	-	-	.04	-
F	Erigeron pumilus	8	8	4	10	.02	.15	.05
F	Eriogonum racemosum	$_{a}$-	$_{b}$42	$_{b}$36	$_{b}$33	.27	.26	.63
F	Erigeron speciosus	$_{b}$16	$_{c}$29	$_{a}$-	$_{a}$-	.33	-	-
F	Eriogonum umbellatum	$_{a}$-	$_{b}$9	$_{b}$14	$_{b}$8	.22	.30	.33
F	Hymenopappus filifolius	$_{b}$10	$_{a}$-	$_{a}$2	$_{a}$2	-	.03	.18
F	Hymenoxys richardsonii	28	25	17	28	.08	.14	.36
F	Ipomopsis aggregata	-	-	-	3	-	-	.03
F	Lesquerella spp.	7	18	20	13	.05	.09	.06
F	Lithospermum incisum	-	5	-	-	.01	-	.03

Type	Species	Nested Frequency				Average Cover %		
		'88	'94	'99	'04	'94	'99	'04
F	Linum lewisii	-	2	-	-	.01	-	-
F	Lupinus argenteus	2	10	8	6	.08	.16	.10
F	Lygodesmia grandiflora	-	-	-	3	-	-	.03
F	Machaeranthera canescens	$_{b}$46	$_{ab}$18	$_{a}$11	$_{a}$7	.10	.10	.10
F	Machaeranthera grindelioides	$_{b}$37	$_{a}$11	$_{a}$8	$_{a}$9	.08	.07	.04
F	Oxytropis lambertii	$_{b}$22	$_{a}$1	$_{a}$-	$_{a}$5	.00	-	.03
F	Penstemon carnosus	$_{b}$34	$_{ab}$39	$_{b}$33	$_{a}$10	.18	.68	.14
F	Penstemon spp.	$_{b}$33	$_{b}$39	$_{b}$35	$_{a}$-	1.21	.81	-
F	Petradoria pumila	$_{a}$19	$_{b}$63	$_{b}$56	$_{b}$73	2.26	2.49	2.96
F	Penstemon watsonii	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$11	-	-	.84
F	Phlox austromontana	$_{a}$-	$_{c}$71	$_{c}$71	$_{b}$56	1.92	2.25	2.23
F	Phlox longifolia	-	-	-	2	-	-	.00
F	Polygonum douglasii (a)	-	11	6	12	.02	.01	.05
F	Senecio multilobatus	$_{a}$3	$_{ab}$5	$_{b}$14	$_{ab}$4	.01	.07	.01
F	Taraxacum officinale	4	-	3	2	-	.01	.03
F	Zigadenus paniculatus	-	-	-	3	-	-	.03
Total for Annual Forbs		0	11	6	12	0.01	0.00	0.05
Total for Perennial Forbs		426	558	488	356	8.32	9.57	10.31
Total for Forbs		426	569	494	368	8.35	9.59	10.36

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 16C, Study no: 30

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	Amelanchier utahensis	29	23	26	3.84	2.87	4.01
B	Artemisia nova	7	21	31	.42	.91	2.83
B	Artemisia tridentata vaseyana	66	50	48	2.99	5.00	5.60
B	Cercocarpus ledifolius	24	26	20	5.79	7.88	9.30
B	Cercocarpus montanus	5	5	4	.00	.21	.33
B	Chrysothamnus depressus	19	17	15	.28	.37	.45
B	Chrysothamnus viscidiflorus viscidiflorus	21	19	14	.69	.45	.63
B	Eriogonum corymbosum	171	2	1	.15	.03	-
B	Gutierrezia sarothrae	14	12	31	.21	.10	.71
B	Juniperus osteosperma	0	0	1	.15	-	.03
B	Leptodactylon pungens	8	8	6	.15	.36	.60
B	Pediocactus simpsonii	0	0	2	-	-	.00
B	Pinus edulis	0	1	1	.15	-	-
B	Purshia tridentata	33	37	40	4.69	4.87	6.39
B	Rosa woodsii	13	13	16	.82	.96	1.37
B	Symphoricarpos oreophilus	36	41	36	3.26	4.06	3.30
B	Tetradymia canescens	1	1	3	.03	-	-
B	Yucca baileyi navajoa	7	7	5	.09	.16	.19
Total for Browse		454	283	300	23.03	28.29	35.79

CANOPY COVER, LINE INTERCEPT --
Management unit 16C, Study no: 30

Species	Percent Cover	
	'99	'04
Amelanchier utahensis	2.79	7.46
Artemisia nova	-	1.43
Artemisia tridentata vaseyana	-	8.39
Cercocarpus ledifolius	10.60	17.46
Cercocarpus montanus	-	.85
Chrysothamnus depressus	-	.33
Chrysothamnus viscidiflorus viscidiflorus	-	.85
Eriogonum corymbosum	-	.08
Gutierrezia sarothrae	-	.73
Juniperus osteosperma	-	.61
Leptodactylon pungens	-	.30
Pinus edulis	2.00	2.00
Purshia tridentata	-	8.69
Rosa woodsii	-	2.06
Symphoricarpos oreophilus	-	6.34
Yucca baileyi navajoa	-	.06

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 16C, Study no: 30

Species	Average leader growth (in)
	'04
Amelanchier utahensis	3.4
Cercocarpus ledifolius	4.9
Cercocarpus montanus	5.3
Purshia tridentata	4.2

POINT-QUARTER TREE DATA --
Management unit 16C, Study no: 30

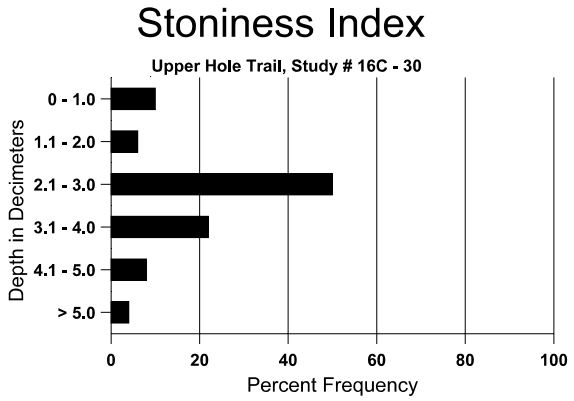
Species	Trees per Acre		Average diameter (in)	
	'99	'04	'99	'04
Cercocarpus ledifolius	119	92	3.8	4.9
Pinus edulis	20	-	12.3	-
Pinus flexilis	19	-	13.8	-

BASIC COVER --
Management unit 16C, Study no: 30

Cover Type	Average Cover %			
	'88	'94	'99	'04
Vegetation	13.25	38.02	42.09	51.63
Rock	.50	3.47	5.51	5.17
Pavement	0	.59	2.87	1.95
Litter	55.50	38.12	52.62	45.40
Cryptogams	.25	.03	.03	0
Bare Ground	30.50	26.51	21.57	23.04

SOIL ANALYSIS DATA --
Management unit 16C, Study no: 30, Study Name: Upper Hole Trail

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
15.1	49.0 (11.9)	7.3	44.0	22.2	33.8	2.6	2.6	54.4	0.6



PELLET GROUP DATA --
Management unit 16C, Study no: 30

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	15	48	21
Elk	3	14	17
Deer	3	3	5
Cattle	5	8	7

Days use per acre (ha)	
'99	'04
-	-
32 (79)	29 (72)
5 (12)	15 (36)
31 (77)	8 (20)

BROWSE CHARACTERISTICS --
Management unit 16C, Study no: 30

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Amelanchier utahensis												
88	**4799**	1333	4733	66	-	-	7	0	0	-	0	27/12
94	**1180**	-	260	900	20	20	8	2	2	-	0	29/31
99	**680**	120	300	300	80	-	50	24	12	6	6	80/81
04	**640**	-	200	360	80	-	19	44	13	3	3	42/44
Artemisia nova												
88	**265**	-	66	133	66	-	0	0	25	-	25	7/8
94	**300**	-	-	180	120	20	0	0	40	33	33	11/19
99	**1280**	140	280	820	180	140	22	2	14	6	11	8/15
04	**1760**	40	660	680	420	120	1	0	24	10	10	8/18
Artemisia tridentata vaseyana												
88	**2132**	800	866	933	333	-	9	3	16	-	38	20/21
94	**2420**	40	420	1440	560	260	7	0	23	14	14	17/21
99	**2200**	980	660	1320	220	240	9	0	10	.90	5	19/27
04	**2300**	140	620	1580	100	120	13	3	4	2	2	19/25
Cercocarpus ledifolius												
88	**0**	-	-	-	-	-	0	0	0	-	0	-/-
94	**720**	-	80	640	-	-	3	6	0	-	0	46/47
99	**800**	40	100	640	60	140	33	28	8	-	0	68/57
04	**480**	20	40	420	20	40	4	50	4	-	0	62/57
Cercocarpus montanus												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**240**	-	60	180	-	-	67	0	-	-	0	25/37
99	**220**	40	20	200	-	-	9	73	-	-	0	20/24
04	**200**	-	40	160	-	-	0	80	-	-	0	18/22
Chrysothamnus depressus												
88	**0**	-	-	-	-	-	0	0	0	-	0	-/-
94	**1000**	-	-	920	80	-	18	0	8	2	2	5/6
99	**660**	-	80	420	160	-	45	18	24	3	3	3/12
04	**700**	-	-	700	-	-	3	0	0	-	0	5/10
Chrysothamnus viscidiflorus viscidiflorus												
88	**1065**	-	333	666	66	-	6	6	6	-	56	2/4
94	**780**	-	40	700	40	-	5	0	5	-	0	6/10
99	**560**	-	20	440	100	-	54	11	18	7	18	12/13
04	**660**	-	-	660	-	-	0	0	0	-	15	11/13

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Eriogonum corymbosum												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**140**	-	-	140	-	-	14	0	-	-	0	9/15
99	**40**	-	-	40	-	-	0	0	-	-	0	7/18
04	**20**	20	20	-	-	-	0	0	-	-	0	7/12
Gutierrezia sarothrae												
88	**66**	-	-	66	-	-	0	0	-	-	0	6/2
94	**480**	-	40	440	-	-	0	0	-	-	0	6/6
99	**680**	20	140	540	-	-	0	0	-	-	0	6/6
04	**1200**	-	-	1200	-	-	0	0	-	-	0	8/8
Juniperus osteosperma												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**20**	-	20	-	-	-	0	0	-	-	0	-/-
Leptodactylon pungens												
88	**0**	-	-	-	-	-	0	0	0	-	0	-/-
94	**600**	-	20	580	-	-	0	0	0	-	0	13/8
99	**800**	-	40	720	40	-	0	0	5	-	0	6/7
04	**660**	-	20	540	100	20	0	0	15	3	3	7/6
Pediocactus simpsonii												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**40**	-	20	20	-	-	0	0	-	-	0	-/-
Pinus edulis												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**20**	-	20	-	-	-	0	0	-	-	0	-/-
04	**20**	-	20	-	-	-	0	0	-	-	0	-/-
Purshia tridentata												
88	**1132**	-	600	466	66	-	41	0	6	-	0	12/39
94	**2720**	-	160	2540	20	-	18	.73	1	-	0	11/36
99	**1980**	60	440	1480	60	80	44	47	3	2	2	16/38
04	**2080**	60	60	1920	100	-	30	63	5	-	0	16/40

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Rosa woodsii												
88	**0**	-	-	-	-	-	0	0	-	-	0	-/-
94	**3060**	-	540	2520	-	-	0	0	-	-	0	8/5
99	**2080**	780	1340	740	-	-	0	0	-	-	0	17/10
04	**960**	-	200	760	-	-	0	0	-	-	0	9/8
Symphoricarpos oreophilus												
88	**1532**	733	1466	66	-	-	0	0	0	-	0	64/43
94	**2360**	-	160	2160	40	-	8	4	2	-	0	12/24
99	**1740**	140	520	1200	20	-	5	0	1	-	0	17/27
04	**1560**	40	100	1460	-	-	19	0	0	-	0	15/28
Tetradymia canescens												
88	**666**	-	466	200	-	-	0	0	-	-	0	5/6
94	**40**	-	40	-	-	-	0	0	-	-	0	4/6
99	**20**	-	20	-	-	-	0	0	-	-	0	-/-
04	**80**	-	40	40	-	-	0	0	-	-	0	4/7
Yucca baileyi navajoa												
88	**66**	-	-	66	-	-	0	0	-	-	0	9/10
94	**320**	-	220	100	-	-	0	0	-	-	0	8/10
99	**320**	-	180	140	-	20	0	0	-	-	0	6/12
04	**140**	-	20	120	-	-	0	0	-	-	0	7/9